

1. A computer-implemented method for biometric authentication, said method comprising:

reading a first live internal biological trait of an individual;

reading a second biological trait of said individual; and

5 authenticating the identity of said individual if both of said biological traits

correspond with previously enrolled biological traits taken for said

individual.

2. The method of claim 1 wherein said first live internal biological trait is a
10 heartbeat.

3. The method of claim 2 wherein said first biological trait is measured by
reflecting light off of the subdermal layers of skin tissue on said individual.

4. The method of claim 3 wherein said second biological trait is measured by
15 reflecting light off of the skin of said individual.

5. The method of claim 4 wherein said step of authenticating is performed by a
portable computerized device.

6. The method of claim 5 further comprising weighting some quantitative features of said biological traits more than other quantitative features of said biological traits.

5 7. The method of claim 6 further comprising means for verifying physiological activity.

8. The method of claim 1 wherein said second biological trait comprises the light absorption characteristics of the skin tissue of said individual.

9. A method comprising:
reading a first live internal biological identifier of an individual, said first live
internal biological identifier being a heartbeat waveform measured by
reflecting light off of the subdermal layers of skin tissue on said individual;
5 reading a second live internal biological identifier of said individual; and
authenticating the identity of said individual if both of said biological identifiers
correspond with previously enrolled biological identifiers taken for said
individual.

10. The method of claim 9 wherein said second live internal biological
identifier comprises the depth of a previously-identified layer of epithelial tissue.

11. The method of claim 9 wherein said second live internal biological
identifier comprises bone density.

12. The method of claim 9 wherein said second live internal biological
identifier comprises the retinal pattern of an iris.

13. The method of claim 9 wherein said method is performed by a single
20 computer chip.

14. The method of claim 13 wherein said single computer chip is incorporated into a personal digital assistant.

15. The method of claim 9 further comprising weighting some quantitative features of said biological identifiers more than other quantitative features of said biological identifiers.

16. A method comprising:

presenting an individual's live body tissue to an authenticating device for the

capturing of a first live internal biological identifier of said individual, said

first live internal biological identifier being a heartbeat;

5 providing a second biological identifier of said individual to said authentication device;

upon authentication by said device, operating said device to perform functions

previously inaccessible to unauthorized individuals, said authentication

taking place upon the matching of both of said biological identifiers with

10 previously enrolled biological identifiers taken for said individual.

17. The method of claim 16 wherein said second biological identifier comprises the light absorption characteristics of the skin tissue of said individual.

15 18. The method of claim 16 wherein said authentication is performed by a single computer chip.

19. The method of claim 16 wherein said authentication further comprises weighting some quantitative features of said biological identifiers more than other
20 quantitative features of said biological identifiers.

20. A computer data signal embodied in a transmission medium such as a carrier wave comprising instructions for:

reading a first live internal biological trait of an individual;

reading a second biological trait of said individual; and

5 authenticating the identity of said individual if both of said biological traits

correspond with previously enrolled biological traits taken for said individual.

21. The signal of claim 20 wherein said first live internal biological trait is a heartbeat.

22. The signal of claim 20 wherein said first biological trait is measured by reflecting light off of the subdermal layers of skin tissue on said individual.

23. The signal of claim 20 wherein said second biological trait is measured by reflecting light off of the skin of said individual.

24. The signal of claim 20 wherein said step of authenticating is performed by a portable computerized device.

25. The signal of claim 20 further comprising weighting some quantitative features of said biological traits more than other quantitative features of said biological traits.

5 26. The signal of claim 20 further comprising means for verifying physiological activity.

27. The signal of claim 20 wherein said second biological trait comprises the light absorption characteristics of the skin tissue of said individual.

28. A computer-readable medium comprising instructions for:
reading a first live internal biological identifier of an individual, said first live
internal biological identifier being a heartbeat;
reading a second live internal biological identifier of said individual; and
5 authenticating the identity of said individual if both of said biological identifiers
correspond with previously enrolled biological identifiers taken for said
individual.

29. The medium of claim 28 wherein said second live internal biological
10 identifier comprises the depth of a previously-identified layer of epithelial tissue.

30. The medium of claim 28 wherein said second live internal biological
identifier comprises bone density.

15 31. The medium of claim 28 wherein said second live internal biological
identifier comprises the retinal pattern of an iris.

32. The medium of claim 28 wherein said method is performed by a single
computer chip.

20 33. The medium of claim 28 wherein said single computer chip is incorporated
into a personal digital assistant.

34. The medium of claim 38 further comprising instructions for weighting some quantitative features of said biological identifiers more than other quantitative features of said biological identifiers.

35. A layered biometric authentication system comprising:
a portable computerized device having an infrared emitter and detector operably
connected to a single computer chip;
means for capturing a first live internal biological identifier of an individual, said
means being located on said portable device and operably connected to said
computer chip, said first live internal biological identifier being a heartbeat,
said first internal biological identifier being measured by reflecting light off
of the subdermal layers of skin tissue on said individual;
means for capturing a second live internal biological identifier of said individual,
said means for reading the second biological identifier being located on said
portable device and operably connected to said computer chip;
means for verifying physiological activity, said verifying means being operably
connected to said computer chip; and
means for authenticating the identity of said individual if both of said biological
identifiers correspond with previously enrolled biological identifiers taken
for said individual, said means for authenticating weighting some
quantitative features of said biological identifiers more than other
quantitative features of said biological identifiers.